

Deployment of Products with Multiple Features and Protocols



Simulates Service Switching Point



Call Flow Customization with Message & Sequence Editors



Supports various ISUP Messages such as IAM, ANM, and more



Graphically Depicts Call Flows in Ladder Diagrams



Provides Fault Insertion, & Erroneous Call Flow Testing



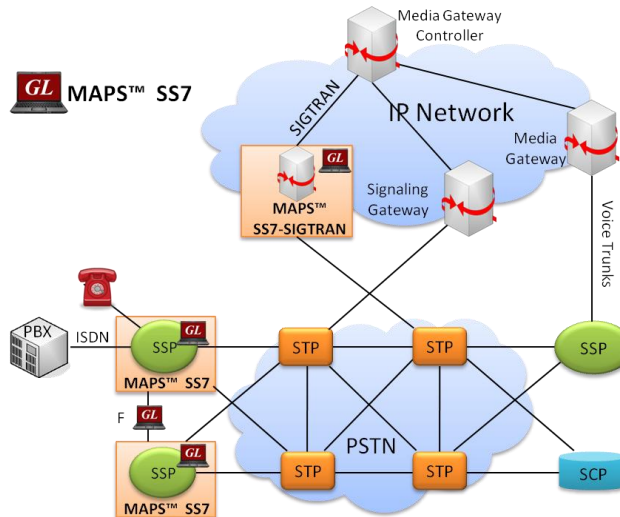
Multiple MTP Links



Multiple T1/E1 Interfaces



MAPS™ SS7 (Scripted ISUP Simulator)



Overview

GL's Message Automation & Protocol Simulation (MAPS™) is a powerful Protocol Test platform supporting a wide range protocols such as SS7 over TDM (T1/E1), ISDN over TDM, Megaco, SIP, MGCP, MEGACO, and SIGTRAN.

GL's MAPS™ SS7 is an advanced protocol simulator/tester for SS7 simulation over TDM (T1E1).The tester can simulate Service Switching Point (SSP) and ISUP signaling specification as defined by the ITU-T, ANSI, ETSI, and CHINA standards. The tester supports testing network elements, error tracking, regression testing, conformance testing, load testing/call generation and generation of high volumes of ISUP traffic. The MAPS™ SS7 functionality covers the ITU, ANSI and CHINA variant of SS7 implementing MTP2, MTP3, and ISUP protocols. It is able to run pre-defined test scenarios against ISUP test objects in a controlled & deterministic manner. The MAPS™ SS7 Conformance Scripts, suitable for conformance tests and functional tests, where test objects can be accurately, reliably and comfortably validated for compliance with ITU-T standard Q.761-764 and Q.784. The MAPS™ SS7 supports powerful tools like Message Editor and Script Editor which allow new scenarios to be created or existing scenarios to be modified using ISUP messages and parameters.

This test tool can also be used to perform protocol conformance testing as per the following ITU-T Recommendation Q.761 – 764 and ITU-T Recommendation Q.784.1 specifications.

For more details, refer to <http://www.gl.com/maps-isup.html>.

Main Features

- SS7 (SSP) simulation over TDM (T1/E1).
- Supports transmission and detection of TDM traffic - digits, voice file, single /dual tones
- Multiple T1/E1 line interfaces supported.
- User-friendly GUI for configuring the SS7 MTP Layers.
- User Configurable Signaling Links.
- User-configured Circuit Mapping, i.e. defines Circuit Identification Codes (CIC) and map these CICs to Timeslots/Trunks in order to enable Voice/Data traffic.
- Supports MTP2 and MTP3 protocol machine.
- User controlled access to optional ISUP parameters such as timers.
- Subsequent Address Message (SAM) configurations available.
- Fully Supported Continuity Testing (COT) that includes COT messages.
- Ready scripts for conformance testing.
- Logging of all SS7 Messages in real-time. Each SS7 message displays the CIC values defined within the message.



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A

(Web) <http://www.gl.com/> - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) gl-info@gl.com

Working Principle

- **Message Templates** – Forms the backbone of MAPS™ application that contains various protocol fields with default values.
- **Script Editor** –
 - Creates a script for scenario based testing (call flow)
 - Uses pre-defined message templates in the script
 - Access protocol fields as variables using import/export files
- **Message Editor** – Used to edit / create 'Message Templates'.
- **Profile Editor** – Creates or edit profiles containing values assigned to the variables replacing the original values.
- **Event Profile Editor** – Allows you to create Event Profiles for user-defined events in a script. The value in the profiles can be changed during script execution.

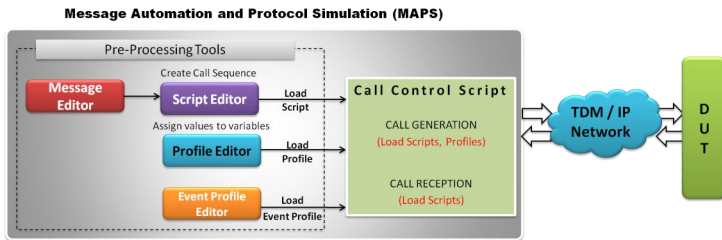


Figure: Working Principle

Testbed Setup Configuration

Test Bed setup is provided to establish communication between MAPS-SS7 and the DUT. It includes configuration parameters to be set for T1/E1 (GL) server and MTP task along with MTP signaling parameters. Once the MTP layer is configured properly, ISUP messages can be transmitted and received over MTP layer.

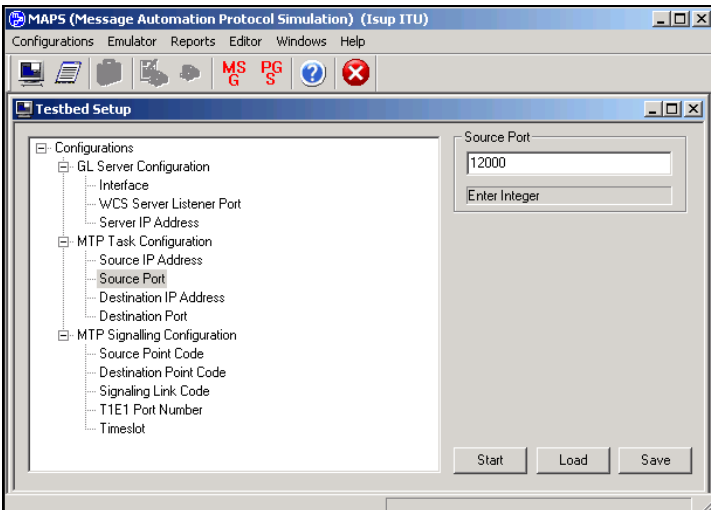


Figure: Testbed Setup Configuration

Pre-processing Tools

Script Editor

The script editor allows the user to create / edit scripts and access protocol fields as variables for the message template parameters. The script uses pre-defined message templates to perform send and receive actions.

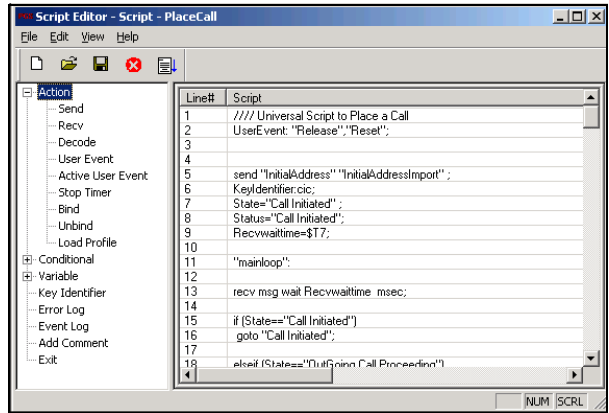


Figure: Script Editor

Message Editor

With message editor, users can build a template for each protocol message type. The value for each field may be changed in the message template prior to testing. The protocol fields comprises of mandatory fixed parameters, mandatory variable parameters, and optional variable parameters.

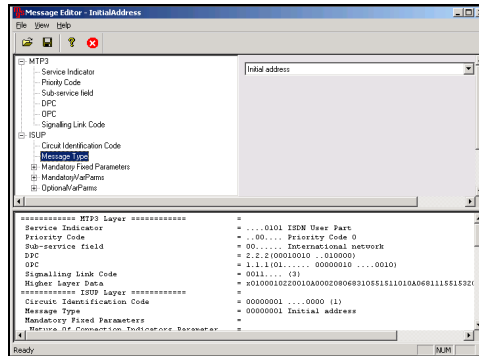


Figure: Message Editor

Profile Editor

This feature allows loading profile to edit the values of the variables using GUI, replacing the original value of the variables in the message template.

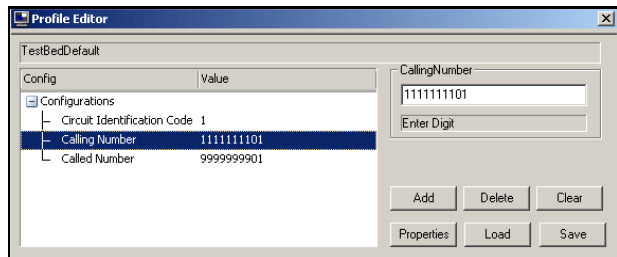


Figure: Profile Editor



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Call Generation and Reception

In call generation, MAPS™ is configured for the out going messages, while in call receive mode, it is configured to respond to incoming messages. Tests can be configured to run once, multiple iterations and continuously. Also, allows users to create multiple entries using quick configuration feature.

The editor allows to run the added scripts sequentially (order in which the scripts are added in the window) or randomly (any script from the list of added script as per the call flow requirements). The test scripts may be started manually or they can be automatically triggered by incoming messages.

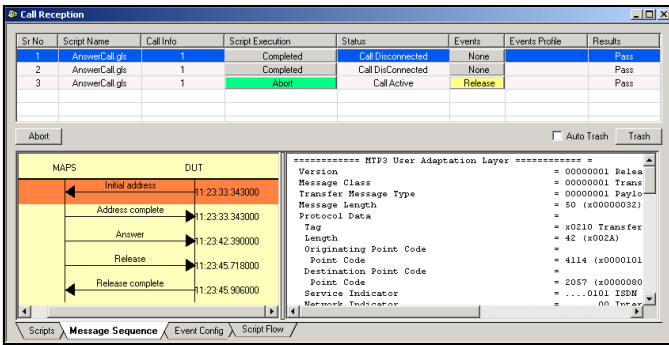
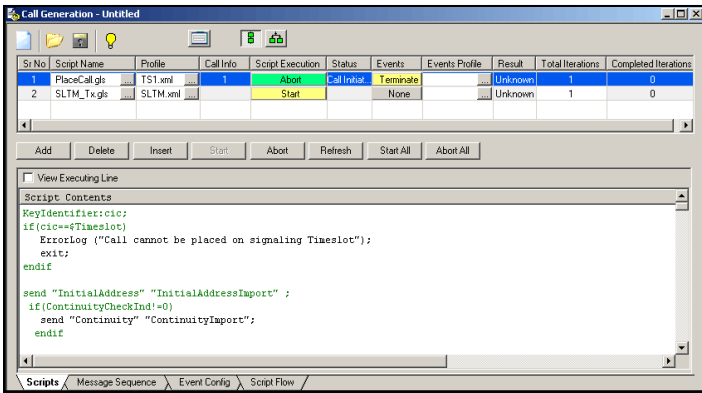


Figure: Call Generation & Call Reception

Incoming Call Handler Configuration

The script configuration option is used to preset the script required to handle all possible ISDN signaling and call control messages against particular message expected to arrive.

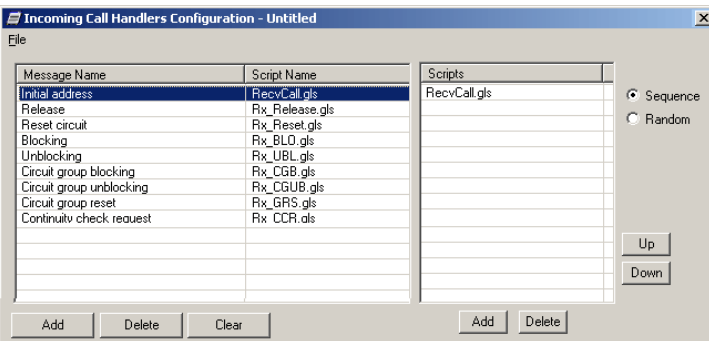


Figure: Incoming Call Handler Configuration

MAPS™ SS7 Call Flow Scenario

Scenario 1: MAPS™-SS7 acting as Signaling Point (Caller) and testing DUT

MAPS™-SS7 is considered as Caller (Signaling Point - SP) and initiates the call flow by sending Initial address message (IAM) to the DUT.

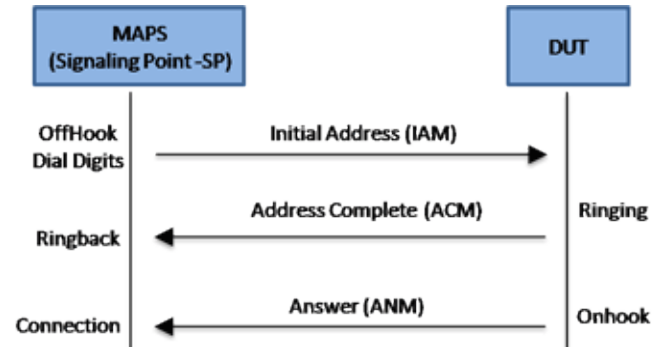


Figure: MAPS-SS7 acting as Signaling Point - SP

Sample Place Call Script

```

send "InitialAddress" "InitialAddressImport";
recv "Address complete" "AddressCompleteExport";
recv "Answer" "AnswerExport";
    
```

Scenario 2: MAPS™-SS7 acting as DUT

MAPS™-SS7 is considered as the DUT (Network) processing the call flow by receiving the Initial address message (IAM) from the caller (Signaling Point – SP).

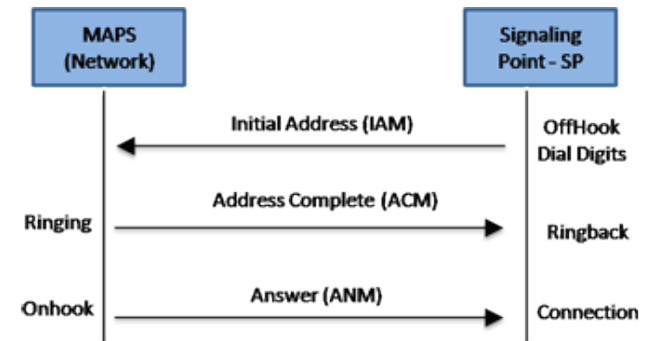


Figure: MAPS-SS7 acting as DUT

Sample Answer Call Script

```

recv "Initial address" "InitialAddressExport";
send "AddressComplete" "AddressCompleteImport";
send "Answer" "AnswerImport";
recv "Release" "ReleaseExport";
    
```



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Supported Protocol and Specifications

Supported Protocols	Standard / Specification Used
MTP3 (ITU)	ITU-T Q.704
ISUP (ITU)	ITU - Q.761, Q.762, Q.763 and Q.764
ISUP Conformance testing	ITU - Q.784.1
ISUP CHINA	Ministry of Posts and Telecommunications of the People's Republic of China, Technical Specification of ISUP, 1996
MTP3 (ANSI)	T1.111.4-1996
ISUP (ANSI)	ANSI - T1.113.1 to T1.113.4
Test & Network Management Messages (ITU, China)	ITU-T Q.703, Q.704
Test & Network Management Messages (ANSI)	ANSI T1.111.4, ANSI T1.111.7
ETSI	EN 300 356 -1 V3.2.2(1998-08)Part 1

Buyer's Guide

[XX649](#) – MAPS™ SS7

[XX647](#) – MAPS™ SS7 Conformance Test Suite (Test Scripts)

XX643 – MTP2 Simulator

[XX600](#) – Basic Client/Server Scripted Control Software

[xx600](#), [xx610](#), [xx620](#) - TDM Traffic Options

Related Software

[XX648](#) – MAPS™ ISDN

[XX692](#) – MAPS™ GSM -A Interface Emulator

[XX693](#) – MAPS™ GSM- Abis Interface Emulator

[PKS130](#) - MAPS™ SIGTRAN (SS7 over IP)

[PKS135](#) - MAPS™ ISDN -SIGTRAN (ISDN over IP)

[XX100](#) - ISDN Analyzer Software

[XX120](#) - SS7 Analysis Software

Buyer's Guide...

Related Software...

[PKS120](#) - MAPS™ SIP

[PKS121](#) - MAPS™ SIP Conformance Test Suite (Test Scripts)

[PKS122](#) – MAPS™ MEGACO

[PKS123](#) – MAPS™ MEGACO Conformance Test Suite (Test Scripts)

[PKS124](#) - MAPS™ MGCP

[PKS125](#) - MAPS™ MGCP Conformance Test Suite (Test Scripts)

Related Hardware

[HTE001](#) - Universal HD T1 or E1 PCI Cards

[UTE001](#) - USB based Dual T1 or E1 Laptop Analyzer

[PTE001](#) - tProbe™ T1 E1 Base Unit

For complete list of MAPS™ products, refer to <http://www.gl.com/maps.html> webpage.



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